

**Method for Loading a Fibrous Suspension and Arrangement for  
Implementing the Method**

**Patent claims**

1. Method for loading a fibrous suspension containing cellulose fibers with calcium carbonate with the following steps of the method:
  - Introduction of calcium hydroxide in liquid or dry form or of calcium oxide into the fibrous suspension,
  - Introduction of gaseous carbon dioxide into the fibrous suspension and
  - Precipitation of calcium carbonate in spherical agglomerations (49) of crystals by the carbon dioxide.
2. Method according to claim 1, characterized in that the process temperature is between 20 and 60°C.
3. Method according to claim 1 or 2, characterized in that cubic or rhombohedral crystals are precipitated which then agglomerate to form the spherical agglomerations (49).
4. Method according to one of the preceding claims, characterized in that the fibrous suspension is beaten during the loading process.
5. Method according to claim 4, characterized in that the beating energy is between 0.1 and 300 kW/h per ton of dry paper stock.
6. Method according to one of the preceding claims, characterized in that the fibrous suspension is washed before the crystallization process and/or before the beating process and/or during the beating process and/or after the beating process.

7. Method according to one of the preceding claims, characterized in that the fibrous suspension is introduced before the introduction into a headbox vat arranged downstream in the flow direction of the fibrous suspension and/or into a machine for the further processing of the fibrous suspension.
8. Method according to one of the preceding claims, characterized in that the fibrous suspension is introduced into a press arrangement (19, 38) for pressing out a filtrate of the fibrous suspension and that a filtrate produced in the press arrangement out of the fibrous suspension is fed back at least in part into an arrangement for slushing or diluting the fibrous suspension.
9. Method according to claim 8, characterized in that the filtrate is fed back into an holding tank on the input side, in particular into a receiver vat (7) and/or storage container (21).
10. Method according to one of the preceding claims, characterized in that at least in the arrangement for slushing the fibrous material, a pH value between 6 and 11.5, in particular between 8.5 and 10.5, is maintained.
11. Method according to one of the preceding claims, characterized in that aqueous fibrous material, in particular aqueous paper stock with a consistency of 0.1 to 20%, preferably between 2 and 8% consistency, is used as base material.
12. Method according to one of the preceding claims, characterized in that the calcium hydroxide is mixed into the aqueous fibrous material, in particular the fibrous paper stock, whereby this has a solid material proportion between 0.01 and 60% of the dry paper mass.
13. Method according to one of the preceding claims, characterized in that the calcium hydroxide is mixed in by means of a mixing device (5), in particular a static mixer, or by means of a receiver vat.

14. Method according to one of the preceding claims, characterized in that the calcium hydroxide reacts in a reaction time that is between 0.01 and 10 minutes, in particular between 1 second and 3 minutes.
15. Method according to one of the preceding claims, characterized in that dilution water is mixed into the fibrous suspension, in particular before, during or after the addition of carbon dioxide and/or calcium hydroxide or calcium oxide.
16. Method according to one of the preceding claims, characterized in that a crystallizer (25), a refiner (beating machine), a disperger and/or a fluffer FLPCC reactor is used as a reactor, whereby the fibrous material content, in particular the paper content, is between 0.01 and 15% with a mixing device (5), in particular a static mixer, between 2 and 40% with a refiner and with a disperger, between 2 and 8% in particular with an LC beating and between 20 and 35% with an HC beating, as well as between 15 and 60% with a fluffer FLPCC reactor.
17. Method according to one of the preceding claims, characterized in that an energy input between 0.3 and 8 kWh/t, in particular between 0.5 and 4 kWh/t, is used for the precipitation reaction.
18. Method according to one of the preceding claims, characterized in that static and/or mobile, in particular rotating, mixing elements are used.
19. Arrangement for implementing a method according to one of claims 1 through 18, characterized in that the reactor is a crystallizer (25), a refiner (beating machine), a disperger and/or a fluffer FLPCC reactor.
20. Arrangement according to claim 19, characterized in that an additional mixing device (9), in particular a static mixer, is present before a dewatering screw (19), in which mixer the fibrous suspension is mixed with calcium hydroxide.

21. Arrangement according to claim 20, characterized in that filtrate of the fibrous suspension obtained in the dewatering screw (19) can be fed back via a line (20) to a receiver vat (7), to a storage container (21) and/or to another upstream device for preparing the fibrous suspension.
22. Arrangement according to one of claims 19 through 21, characterized in that an additional washing device (38) for cleaning the fibrous suspension is arranged after the crystallizer (25).